US ABS Credit Trends

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Macroeconomic Backdrop
Strengthening Labor Market

Unemployment Expected to Continue at Current Levels as Consumer Sentiment Remains Stable

Source: U.S. Bureau of Labor Statistics, Moody’s Analytics
Source: University of Michigan
Household Debt and Oil Expected to Rise

Source: Federal Reserve, Moody's Analytics

Source: U.S. Energy Information Administration, Moody's Analytics
Issuance Tote Board

Cumulative Issuance, 2015-2016
Transactions closed through 31 October 2016

Cumulative Issuance by Asset Class, 2016
Percentage, transactions announced through 8 November 2016

As Percentage of Dollar Amount

- Autos 50%
- Credit Cards 13%
- Other 17%
- Student Loans 8%
- Equipment 6%
- Consumer Loans 6%

Source: Moody’s Investors Service
Spreads on 5-Year Fixed Credit Card ABS

Spreads Spike During Crisis But Remains Stable Since 2010 Between 20 and 60 Basis Points

Source: Asset Backed Alert, Deutsche Bank
US Auto ABS
Auto Sales and Outstanding Auto Loans

Sales of New Autos and Light Trucks Will Likely Slow, but Pace Will Remain Strong

- New Vehicle Sales: Autos and light trucks, (Ths. Units, SAAR)
- Baseline Scenario (November 2016)
- Consumer Credit: Motor vehicle loans: Owned and securitized, (Bil. USD, NSA)

Source: US Bureau of Economics, Federal Reserve, Moody's Analytics
Key Credit Themes

» Credit quality of new auto loan ABS will remain largely consistent with 2016 pools

» Stable economic environment and build-up of credit enhancement will keep credit performance of outstanding auto loan ABS transactions strong in 2017

» Stable used car values will help support auto lease ABS performance, owing to continued demand for used vehicles

» Floorplan ABS performance will continue to benefit from robust auto sales and ongoing consolidation of dealer networks

» Idiosyncratic issues owing to recalls, other events will continue to affect some auto ABS
Credit Quality of New Auto Loan ABS Will Stabilize

» Credit quality of new auto loans will remain consistent with 2016 transactions, which will help performance of new auto loan ABS transactions

» Stability of new auto loan origination is a result of slight tightening of underwriting

Summary of Collateral and Loan Terms at Securitization Closing by Year of Issuance

<table>
<thead>
<tr>
<th>Year</th>
<th>Prime pools</th>
<th></th>
<th>Sub-prime pools</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WA OT (months)</td>
<td>WA RT</td>
<td>WA APR (%)</td>
<td>WA FICO</td>
</tr>
<tr>
<td>2006</td>
<td>61.8</td>
<td>53.3</td>
<td>6.6</td>
<td>721</td>
</tr>
<tr>
<td>2007</td>
<td>62.2</td>
<td>55.3</td>
<td>6.3</td>
<td>717</td>
</tr>
<tr>
<td>2008</td>
<td>61.4</td>
<td>53.4</td>
<td>6.5</td>
<td>723</td>
</tr>
<tr>
<td>2009</td>
<td>62.6</td>
<td>54.3</td>
<td>5.6</td>
<td>740</td>
</tr>
<tr>
<td>2010</td>
<td>62.0</td>
<td>52.6</td>
<td>4.9</td>
<td>743</td>
</tr>
<tr>
<td>2011</td>
<td>62.3</td>
<td>54.5</td>
<td>4.5</td>
<td>739</td>
</tr>
<tr>
<td>2012</td>
<td>62.8</td>
<td>54.3</td>
<td>4.2</td>
<td>743</td>
</tr>
<tr>
<td>2013</td>
<td>64.0</td>
<td>56.1</td>
<td>4.4</td>
<td>738</td>
</tr>
<tr>
<td>2014</td>
<td>64.4</td>
<td>54.1</td>
<td>4.1</td>
<td>742</td>
</tr>
<tr>
<td>2015</td>
<td>65.2</td>
<td>55.7</td>
<td>4.4</td>
<td>738</td>
</tr>
<tr>
<td>2016 Through Q3</td>
<td>64.3</td>
<td>54.2</td>
<td>3.7</td>
<td>743</td>
</tr>
</tbody>
</table>

Source: Moody’s Investors Service
Credit Performance of Outstanding Prime Loan Pools Will Remain Strong

» Annualized net loss rates will continue to increase year-over-year but lifetime cumulative net losses will remain within expectations

– Prime transactions have incurred higher losses since 2011 due to weakening credit quality

Cumulative Net Losses in Prime Auto Loan ABS Pools Have Increased from 2010-11 Levels

Source: Moody's Investors Service, servicing reports
Auto Lease ABS Performance Will Remain Strong

» The credit performance of auto lease ABS transactions will remain robust in 2017, supported by the steady economic environment; residual value performance will remain steady due to a stable used vehicle market

» Leasing will continue to gain popularity, as reflected by its rising penetration rate
  – As of Q3 2016, leasing as a percentage of new vehicle sales is at 29%, from 18% in Q3 2010
  – Credit quality of lessees has been steady both in the general market and in the securitized lease pools, as reflected by consistent credit scores in 2016 compared with 2015

» However, lower vehicle trade-in values, along with a looming interest rate increase, could reduce lease affordability
Floorplan ABS Performance Will Continue to Benefit from Robust Auto Sales and Consolidation of Dealers

» Stable auto sales will continue to be credit positive for dealer floorplan ABS in 2017 by maintaining the ABS payment rates well above trigger levels.

– Auto dealers continue to benefit from high new vehicle sales, as seasonally adjusted annual sales once again averaged around 17.5 million units in Q3 2016. Demand remains high, enabling dealers to grow further. Consolidation of small dealers will continue as a result of larger dealers putting capital to work through acquisitions.

– Larger dealers tend to be less vulnerable to downturns in vehicle sales, because they have other sources of revenue such as selling vehicle parts or providing automotive maintenance.

» Despite a slowdown in the growth rate of auto sales, as anticipated by Moody’s Analytics, dealers will be supported by high gross margin parts and service operations.
Regulators Will Continue to Scrutinize Business Practices of Auto Lenders

» Regulatory scrutiny of subprime auto lenders is likely to continue

» Although the scrutiny could strengthen the industry over the long term if it helps to weed out unethical lending practices, credit performance could decline over the short term if regulators require changes to loan servicing and collection practices

» As of November 2016 Auto ABS issuers will need to comply with additional requirements under Reg AB II, a US Securities and Exchange Commission disclosure rule
  – Reg AB II mandates loan-level disclosure about securitized pools
  – The added disclosures will enhance transparency and reporting requirements of auto ABS

» For securitizations that close after December 2016, ABS issuers in the public market will need to add information in their prospectuses regarding their risk retention, a requirement under the Dodd-Frank Act
  – The disclosures will include the form of risk retention (horizontal, vertical or a combination of the two) and the method of calculating the fair value of the notes and residual interest
US Credit Card ABS
Key Credit Themes

» US credit card ABS will continue to perform well through 2017
  – Strong economy and seasoned card accounts with high quality collateral drive strong performance

» While managed portfolio performance diverges from trust performance, the Big Six sponsors will maintain their credit strength

» Risks will be low for credit card trusts in the near term
  – Likelihood of significant new account additions is low
  – Aaa rated notes are highly resilient

» Today’s exceptional credit quality and performance will not last
US Credit Card ABS Will Continue to Perform Well Through 2017 as Charge-Offs Will Remain Low

» Charge-off rates and total delinquencies continue to remain low, owing to the very seasoned, high credit quality credit card accounts backing the ABS

– A large portion of receivables generated by weaker borrowers exited the card trusts when sponsors charged off their accounts after the recession

– Most issuers have not added new receivables in recent years, so trust portfolios contain fewer risky borrowers and more transactors

**Charge-offs and Total Delinquencies Are Low**

Source: Moody’s Investors Service based on data from public trust filings
US Credit Card ABS Will Continue to Perform Well Through 2017 as Excess Spread Remains High

» The strong economic environment in the US and the high proportion of transactors in the securitized pools will support this elevated level of payments

» Excess spread is at elevated levels because of lower charge-offs, lower coupons on the bonds, elevated finance charges compared to the prevailing low interest rates, and increased interchange

Principal Payment Rates and Excess Spread Remain Elevated

Source: Moody’s Investors Service based on data from public trust filings
Today's Exceptional Credit Quality and Performance Will Not Last

» Performance of credit card receivables will face risks beyond 2016 as consumer debt and interest rates continues to increase and banks continue to loosen their underwriting standards.

Standards Loosen for Credit Cards as the Economy Recovers from the Recession

Note: Data are net percentages of total respondents to the April 2016 Federal Reserve Board Senior Loan Officer Opinion Survey. Percentages above zero indicate relaxing underwriting standards and stronger demand for credit cards. Percentages below zero indicate tightening underwriting standards and weaker demand for credit cards. Data reflects demand for credit cards since Q2 2011 and for all consumer loans before that date.

Source: Federal Reserve, Moody’s Investors Service
US Equipment ABS
Key Credit Themes

» Despite slight declines in economic growth, credit quality of Equipment ABS remain strong in 2016, owing to the financial stability of the underlying obligors

– New agriculture and construction equipment ABS continue to exhibit slight weakness as a result of weakness in the agricultural market.

– Uncertain economic environment may affect performance of new and outstanding ABS backed by trucking transportation and other equipment loans, such as medical, mining and drilling equipment.

– The good credit quality of new and outstanding small-ticket equipment ABS transactions continue to be reflected by the low loss rates on the loans to generally high-quality obligors underlying the equipment contracts in these transactions.
Emerging Sectors
5.1 Marketplace Lending
Key Credit Themes

» Marketplace Lending (MPL) originations are hampered by increased regulatory scrutiny

» MPL ABS issuance picks up despite market challenges

» Any weakness in the US economy will further stress on the nascent MPL industry

» Legal and regulatory risks continue to be at the forefront
  – Viability of the partner-bank loan origination model remains uncertain
  – Marketplace lenders have altered their strategies and business models to mitigate risk
  – Increased regulatory oversight from governing bodies may burden MPL platforms

» Recent events shed light to risks related to corporate governance and data quality

» Performance of outstanding ABS in 2017 will be stable
MPL Originations Hampered by Increased Scrutiny

» Regulators are looking closely at marketplace lenders as a result of negative developments in 2016 including:

- Lending Club’s CEO resigning amid questions about data manipulation and conflicts of interest
- The weaker than expected performance of some marketplace lending platforms
- Recent court developments that highlighted legal risks associated with the partner-bank origination model

Rapid Growth of Marketplace Loan Originations Ended in 2016

Source: Orchard Platform, Moody’s Investors Service
5.2 Handset Financing
Handset Financing Continues to Increase

» Seller financing – i.e. installment plans/loans and leases – is now part of most consumers’ purchases of mobile phones, reflecting a shift since 2013 away from offers of subsidies for device purchases at all of the Big Four carriers:
  – Verizon Communications, Inc.
  – AT&T Corporation
  – T-Mobile US Inc.
  – Sprint Corporation

» The wide adoption signals the diverse credit quality of borrowers taking on the contracts

Sprint Sales Illustrate How Consumers Are Moving Toward Phone Financing

Source: Company presentations, Moody's Investors Service
5.3 Property Assessed Clean Energy (PACE)
PACE Provides Financing of Home Improvements

» PACE programs provide financing of energy efficiency, renewable energy and water conservation upgrades to residential and commercial properties

- Local governments partner with private lenders to provide 100% financing to homeowners for eligible clean energy home improvement projects; homeowners repay the costs through long-term special tax assessments that local governments place on property tax bills
- PACE programs are enacted through state legislation, currently established in 33 states and DC
- PACE legislation typically specifies that a PACE lien is senior to all pre-existing non-tax liens, including first-lien mortgages

### Comparison of PACE with Other Asset Classes

<table>
<thead>
<tr>
<th>Lien Type</th>
<th>Tax Liens*</th>
<th>Senior PACE</th>
<th>Subordinate PACE</th>
<th>Mortgages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obligation Assumed by Subsequent Property Owner</td>
<td>Involuntary</td>
<td>Voluntary**</td>
<td>Voluntary**</td>
<td>Voluntary</td>
</tr>
<tr>
<td>Future Payments Accelerated Upon Foreclosure</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Seniority to Mortgage</td>
<td>Senior</td>
<td>Senior***</td>
<td>Contractually Subordinated</td>
<td>N/A</td>
</tr>
<tr>
<td>Use of Proceeds</td>
<td>N/A</td>
<td>Property Improvements</td>
<td>Property Improvements</td>
<td>Any</td>
</tr>
<tr>
<td>Typical LTV Limit</td>
<td>N/A</td>
<td>15%</td>
<td>15%</td>
<td>60-97%****</td>
</tr>
</tbody>
</table>

* Liens on properties arising out of delinquent property taxes, assessments, sewer rents, sewer surcharges, water rents, and/or other charges
** The decision to join a PACE assessment district is voluntary, but the incurrence of a PACE lien is considered involuntary under some PACE legislation
*** Stipulated by PACE legislation in most states such as California
**** For agency mortgages

Source: Moody's Investors Service
5.4

Solar
Solar Loans Are Becoming a Larger Share of New Originations

» Solar loan originations are likely to increase in 2017, resulting in solar loan ABS
  - Over half of the systems will be owned rather than leased in 2017 based on GTM Research

» As costs of residential solar photovoltaic (PV) systems decline, more financing options, such as loans, become available
  - Some loans might offer more savings than leases and power purchase agreements (PPAs)


Source: GTM Research
Moody’s Investors Service

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Best Islamic Rating Agency: 2015

Project Finance Firm of the Year (USA): 2015

Best Islamic Finance Rating Agency: 2015


#1 US Rating Agency: 2015

#1 US Municipal Research Team: 2014


moodys.com/awards